

Note Outline – Navigating the Sky

I. Reference Marks on Our Sky

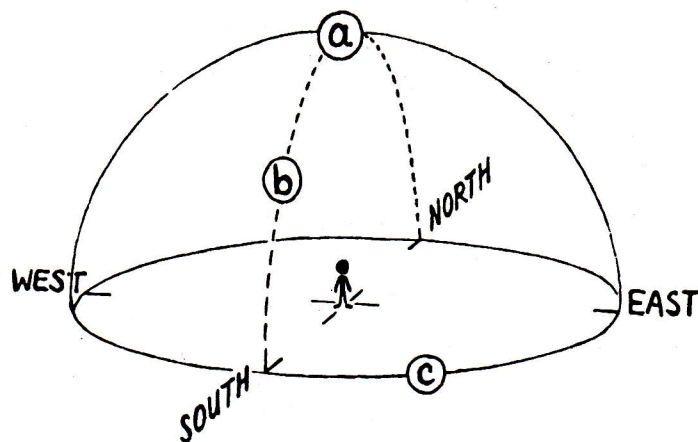


Figure 1.6. A stargazer's local reference lines.

- a. Zenith: point on the celestial sphere directly over your head.
 b. Celestial Meridian: great arc passing through your zenith and the north and south points on your horizon, dividing the sky into East and West.
 c. Celestial horizon: great circle on the celestial sphere 90° from your zenith, 360° around you – where Earth meets the sky.

II. Celestial Sphere

A. The visualization of the sky as a huge hollow globe or sphere in which stars and other bright objects are fixed. This sphere rotates about Earth with an apparent east to west motion. * Diurnal Motion (E actually rotating Eastward)
 ↳ Daily

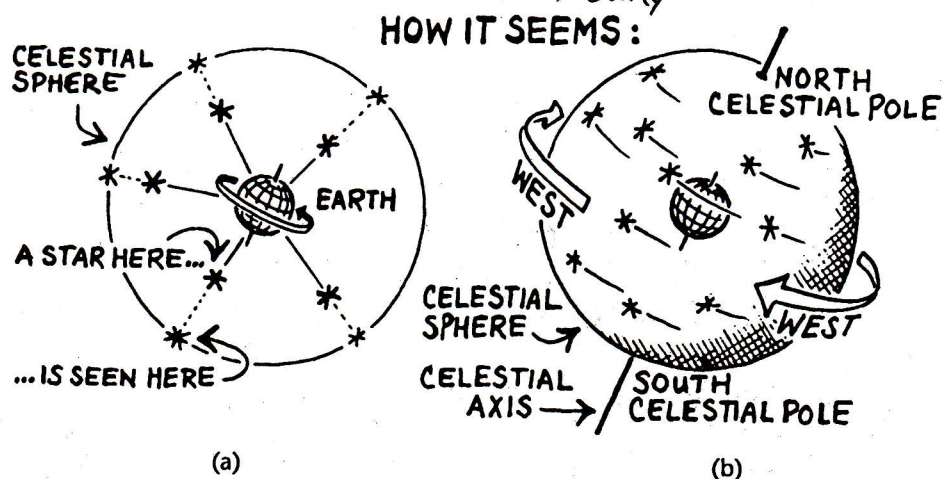


Figure 1.1. (a) To a stargazer on Earth, all stars appear equally remote. (b) We picture the stars as fixed on a celestial sphere that spins westward daily (opposite to Earth's actual rotation).

- points to.
- i. Celestial Poles : Places in the sky that the Earth's axis
 - a. North Celestial Pole: Near Polaris ("northstar") → "The star that does not walk around" Pawnee Indians
 - b. South Celestial Pole: No "southstar"
 * NCP and SCP shift positions slightly over a 26K year cycle due to precession * Fig. 2-9
 - ii. Celestial Equator : Projection of Earth's equator outward onto the celestial sphere.
 - iii. Declination / Right Ascension : Gridlines on the celestial sphere like latitude/longitude lines on a globe.
 - iv. North Circumpolar Stars: Region around NCP where stars never set, as seen from the Northern Hemisphere.
 - v. South Circumpolar Stars: Region around SCP where stars never rise, as seen from the Northern Hemisphere.
 - vi. Equatorial Stars: Region in between N/S Circumpolar regions where stars do rise and set. Between -50° and 50° declination.
 - vii. Ecliptic : Path of the Sun on the celestial sphere, created by the projection of Earth's orbit onto the celestial sphere. ↳ Fig. 2-14
 - a. Zodiac : The 12 constellations through which the ecliptic runs. ↳ Fig. 2-13

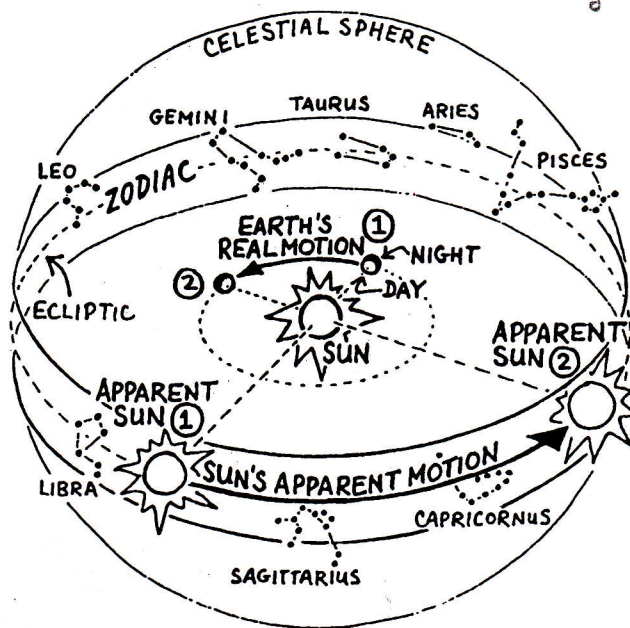


Figure 1.10. The Sun's apparent annual motion around the celestial sphere results from Earth's real motion around the Sun. As Earth orbits the Sun, different constellations of the zodiac appear in the night sky.